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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,161	02/13/2004	Toshiyuki Masuda	023484-0158	5102

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EXAMINER	
BINDA, GREGORY JOHN	
ART UNIT	**PAPER NUMBER**
3679	

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/777,161	MASUDA, TOSHIYUKI	
	Examiner	Art Unit	
	Greg Binda	3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-12* is/are pending in the application.

4a) Of the above claim(s) *3 and 11* is/are withdrawn from consideration.

5)☒ Claim(s) *12* is/are allowed.

6)☒ Claim(s) *1 and 5-10* is/are rejected.

7)☒ Claim(s) *4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 February 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *See Continuation Sheet*.

Continuation of Attachment(s) 6). Other: English language translation of JP 61-117921.

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

2. Claims 3 & 11 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election of Species II shown in Figs. 6-9 was made **without** traverse in the reply filed on July 20, 2005.

Claims 3 & 11 must cancelled since none of the claims indicated as allowable is a generic claim.

Drawings

3. The drawings are objected to because reference numerals 8, 10, 10A, 17, 17d are used to identify parts in the first embodiment and then reused to identify modifications of such parts in the second embodiment. Such usage is proscribed. See MPEP § 608.02(e).

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must

be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The specification is objected to as failing to provide proper antecedent basis for the limitation in claim 5, line 9, "a stepped portion".

Claim Rejections - 35 USC § 102

6. Claims 1, 5, 6 & 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 61-117921. Figs. 1-3 show a universal coupling comprising all the limitations of the claims. Fig. 3A shows a first air bleeding passage/groove 23 formed in the cylindrical wall of the end 19 of the boot 17 and arrow A indicates the inside end surface of the cover 24 expands so as to define a second air bleeding passage. See also the last paragraph on page 5 of the English language translation of JP 61-117921.

Claim Rejections - 35 USC § 103

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 61-117921. Fig. 3 shows the leading lip of the boot cover 24 is formed with effectively one groove, not a plurality of grooves. However, making the leading lip portion with a plurality of such grooves would have been obvious at the time of applicant's invention, since such a modification would have involved a mere duplication of parts. The duplication of parts for a multiplied effect has no patentable significance and is considered well within the purview and obvious to one of ordinary skill in the art. *St. Regis Paper Co. v. Bemis Co., Inc.* 193 USPQ 8, 11 (7th Cir. 1977).

Allowable Subject Matter

8. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claim 12 is allowed.

Response to Arguments

10. Applicant's arguments filed Nov 16, 2005 have been fully considered but they are not persuasive.

a. In regard to item 3 above, applicant argues that the reference numerals are used properly because they identify the same parts in the different species. However, it is only proper to use the same reference numeral in different embodiments when the element

identified by the numeral is unmodified. That is not the case here. See for example reference numeral 8. In Species I it identifies a rubber boot having grooves 16, but in Species II numeral 8 identifies a modified rubber boot, a boot that lacks grooves like the grooves 16 in Species I.

b. In regard to item 5 above, applicant argues that the specification provides proper antecedent for the limitation, "a stepped portion" because it is shown in Fig. 1. However, the objection is in regard to the specification, not the drawings. (Note, if the drawings failed to show the limitation, they would be objected to also.)

c. Applicant argues that JP '921 fails to disclose or suggest a second passage that is defined between the axially leading end of the cylindrical wall and the inside surface of the boot cover 24 because the Fig. 3A shows the cover 24 contacting the end portion 19 of the boot 17. However, as noted in the rejection above, the arrow A in Fig. 3A indicates the inside end surface of the cover 24 expands so as to define a second air bleeding passage. See also the last paragraph on page 5 of the English language translation of JP 61-117921.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Greg Binda whose telephone number is (571) 272-7077. The examiner can normally be reached on M-F 9:30 am to 7:00 pm with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on (571) 272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Greg Binda
Primary Examiner
Art Unit 3679

ENGLISH LANGUAGE TRANSLATION OF JP 61-117921

PTO: 2005-5880

Japanese Published Unexamined Utility Patent Application (U) No. 61-117921, published July 25, 1986; Application Filing No. 60-000532, filed January 9, 1985; Inventor(s): Tetsuo Ishimi; Assignee: N. O. K. Corporation; Japanese Title: Boot Universal Joint

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Boot for Universal Joint

CLAIM(S)

An elastically deformable boot for a universal joint, wherein its both ends are formed as attaching sections to be attached to the joint; said boot being characterized as follows: an air-hole is made in the axial direction of one of the cylindrical attaching sections; a cylindrical cover covering the end section of said one of the attaching sections is installed to be mountable on the joint; said cylindrical cover contacts with the end section of said one of the cylindrical attaching section, and air flows through the section where said cylindrical cover and the end section of cylindrical attaching section contact with each other by a centrifugal force caused by the rotation of universal joint.

DETAILED DESCRIPTION OF THE INVENTION

(Field of Industrial Application)

The present invention pertains to a boot for a universal joint that prevents an inflow of dust and water and outflow of a lubricant, particularly to the boot wherein air flows in and out of the boot by a centrifugal force generated by the rotation of universal joint.

(Prior Art)

As shown in Fig. 4, in the prior art joint 1, a boot 4 is attached to a joint to prevent dust and water from coming into its inner lace 2 and ball 3.

By the joint's rotation, extension, and telescoping, heat is generated in the joint and the air inside the boot is expanded. The boot 4 is deformed by this air expansion and is susceptible to damages. If it is broken, dust and water come into the ball 3 inside the joint, allowing a lubricant to leak out resulting in significant loss of lubrication function.

(Problems of the Prior Art to Be Addressed)

The present invention attempts to present a boot for a universal joint wherein a space is temporarily formed to allow the air inflow and outflow along with the rotation of the joint when a pressure change occurred inside the boot, and wherein the inflow of dust and water and the outflow of lubricant are completely prevented when the joint is stopping.

(Means to Solve the Problems)

With the boot for a universal joint of the present invention, an air-hole is made in the axial direction of one of the cylinder attaching sections, and the cylindrical cover for covering said one of the cylinder attaching sections is installed to be mountable on the joint. This cylindrical cover is brought into contact with the end section of said one of the cylindrical attaching sections and forms a space between itself and the joint's outer peripheral surface. The cylindrical cover section constituting this space can be expanded outward by the centrifugal force caused by the rotation of universal joint.

(Operation)

In the boot having the aforementioned means, when the universal joint is stopping, the cylindrical cover and the end section of one of the cylindrical attaching section are contacting, preventing the inflow of dust and water and the outflow of lubricant.

Once the universal joint is heated by its rotation and telescoping/expanding and the air inside the boot is expanded, a minute space is formed between the cylindrical cover and the cylindrical attaching section by the centrifugal force generated by the rotation, allowing the air flow out through the space, so the internal pressure is kept in normal state.

Subsequently, the rotation of the universal joint is stopped, the temperature is dropped, a normal temperature is resumed inside, and negative pressure is created inside the boot. But, when the universal joint begins to rotate again, a minute space is formed between the cylindrical cover and the cylindrical attaching section by the centrifugal force, allowing the air to flow in.

(Embodiment Example)

The embodiment example of the present invention is explained below with reference to Fig. 1 - Fig. 3 A, B.

In the universal joint 10, the outer casing 12 of one member 11 and the inner casing 14 of the other member 13 are connected via the gauge 15 and ball 16.

The section between the outer casing 12 and the axial section of the other member 13 is covered with an elastically deformable boot 17, and the cylindrical attaching sections 18 and 19 at both ends of boot are secured with fastening implements 20 and 21, so dust and water do not come into the joint section of the universal joint and the internal lubricant does not flow out. In the boot-mounting shaft section in the other member 13, multiple annular projected strips are formed, and between these annular projected strips, the inner circumferential protrusion of one of the

cylindrical attaching sections 19 is inserted so both do not move and are sealed airtight.

In the inner circumferential surface of one of the cylindrical attaching sections 19, the air-hole 23 is made in the axial direction. The end section of the cylindrical attaching section 19 is formed in round shape and line-contacted with the cylindrical cover mentioned later.

The elastically deformable cylindrical cover 24 is installed to cover the cylindrical attaching section 19, and the attaching section of the cylindrical cover is secured to the shaft section of the other member 13 with a fastening implement 25, as with the case of cylindrical attaching section 19. The cylindrical cover 24 expands from its attaching section in arc shape in side sectional view, and its end is formed in taper shape. The arc shaped section 24a in sectional view is contacted with the end section of cylindrical attaching section 19 by slight contacting pressure. In addition, a space 26 is formed between the arc-shaped section 24a of cylindrical cover 24 and the outer circumferential surface of axial section of the other member 13, and this space 26 is connected to the boot 17 via the air-hole 23.

Accordingly, when there is normal pressure inside the boot 17, the cylindrical cover 24 expands outward as the joint rotates, as shown by arrow A in Fig. 3A, and the air in the boot escapes, as shown by arrow a. Also,

when there is negative pressure in the boot 17, the outside air comes into the boot 17 as the universal joint again rotates, as shown by b in Fig. 3B.

(Advantage of the Invention)

As explained above, with the boot of the present invention, it has an air-hole shielded with a cylindrical cover, and the cylindrical cover is deformed allowing air to come in and out of the boot via the air-hole, so the boot is prevented from being damaged. The air-hole of the boot is contacted with outside air only at the time of joint's rotation and is shielded with the cylindrical cover at the time of joint's stopping, so the water inflow into the boot and the lubricant outflow from the boot are perfectly prevented.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows a vertical side view of the boot attached to the universal joint. Fig. 2 shows a side view of the line II – II section of Fig. 1. Fig. 3A, B show side views of the key components, respectively. Fig. 4 shows a vertical side view of the prior art boot attached to the universal joint.

11. one of the members

13. other member

17. boot

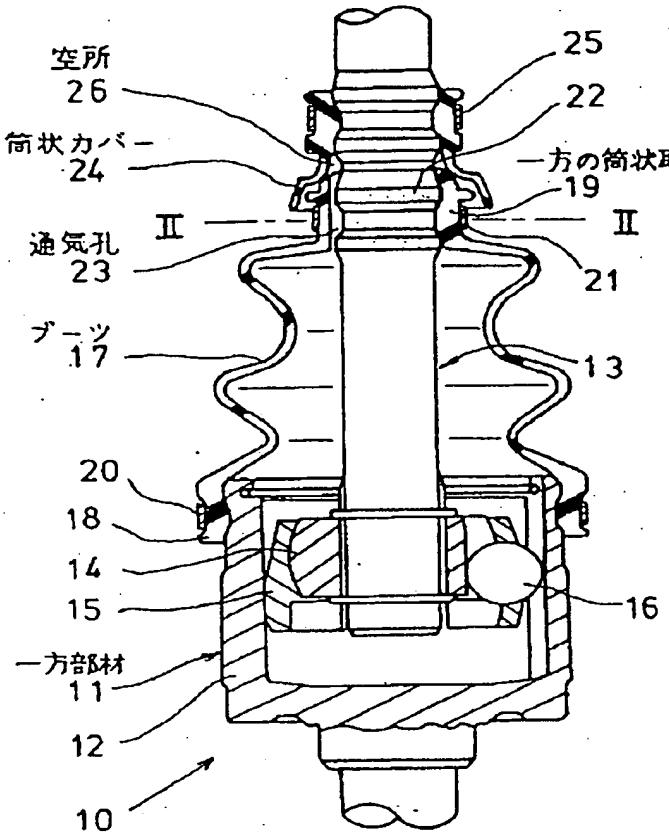
19. one of the cylindrical attaching sections

23. air hole

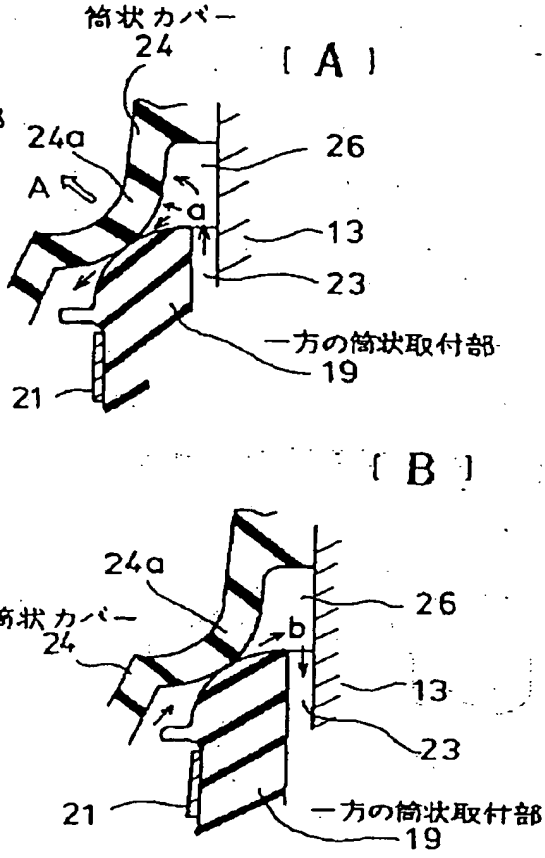
24. cylindrical cover

Translations
U. S. Patent and Trademark Office
9/2/05
Akiko Smith

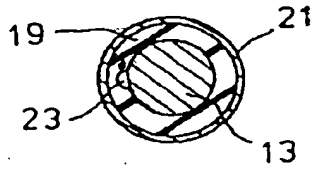
第 1 図



第 3 図



第 2 図



258

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